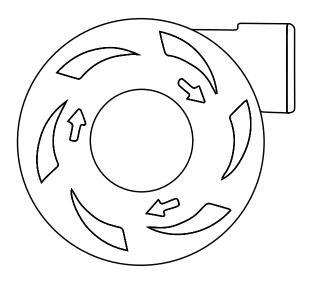




RB4000

**CENTRIFUGAL BLOWER OWNER'S MANUAL** 



#### WARNING

Service procedures beyond the scope of this manual should only be performed by trained service personnel.

#### **IMPORTANT**

Read the following safety instructions carefully. Disconnect blower from electrical source before using an approved lockout/tagout procedure before attempting service.

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800.847.0380



#### SAFETY INSTRUCTIONS

- 1. Always use qualified electrical and mechanical personnel for installation and maintenance of Republic blowers and motors.
- 2. Disconnect the electrical power at the motor starter, fuse box or circuit breaker before working on the system. Take special precautions to make sure the power cannot be turned on while you are working on the blower. **Use an approved Lock Out/Tag Out system.**
- 3. Make sure the motor is electrically grounded, the mounting bolts are properly secured, and all guards are in place before start-up.
- 4. Wear safety glasses and earplugs when working on the blower, air knife or discharge nozzles within a Republic Blower System.
- **5. Do not operate blower/motor assembly with the belt guard removed.** Make sure to install the inlet air filter or piping to blower inlet, before starting the blower/ motor.
- 6. Do not operate blower with the outlet open to atmosphere. Connect system piping or butterfly valve to prevent overloading the motor. **Check the final installation for proper amp loads.**
- 7. Keep all tools, loose clothing and hands away from rotating or moving parts while the unit is running. Never run the blower unit without the belt guard installed.
- 8. Inspect the blower at regular intervals for damaged or worn parts. Replace damaged parts immediately. Do not connect or turn on a damaged blower.
- 9. Inspect the inlet air filter at regular intervals and replace when necessary. A dirty air filter can cause improper blower performance.
- 10. Use only genuine Republic Manufacturing brand replacement parts or warranty could be voided.

### BLOWER DESCRIPTION AND MODEL IDENTIFICATION

Republic Blower Systems are industrial grade centrifugal blowers capable of producing high velocity air, for drying or cleaning parts, at low operating costs. Six models are available:

- RB500: Compact Model with 3-7.5 HP Motor Sizes
- RB800: Compact Model with or without Motor. 3-15 HP Motor Sizes
- RB1200HC: Standard Model with or without Motor. 3-25 HP Motor Sizes
- RB2000: Standard Model with or without Motor. 20-30 HP Motor Sizes
- RB2400: Dual Headed Model with or without Motor. 25-50 HP Motor Sizes
- RB4000: Standard Model with or without Motor. 40-75 HP Motor Sizes

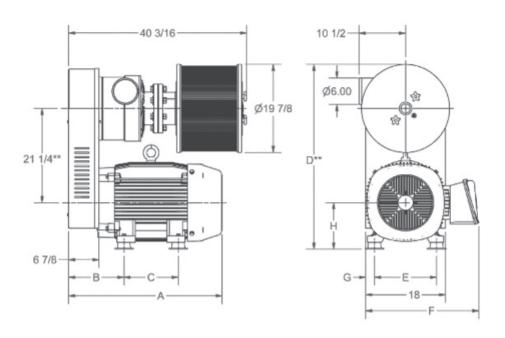
Republic Blowers have a nameplate containing the serial and model number located on the blower head near the exhaust port. The motor manufacturers' nameplate is located on the motor. When placing a service call, please provide the Republic serial number. Call us at (800) 847-0380 or e-mail info@republic-mfg.com. You can find an RMA Form online at www.republic-mfg.com.

- All centrifugal blower models come with mounting brackets and rubber vibration isolators.
- All models have blower housings that can be rotated to almost any position with ease.
- All models are capable of converting over to water-cooled systems (with optional purchased parts).
- All models come with a self-tensioning belt.

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# **EQUIPMENT ARRIVAL AND INSPECTION**

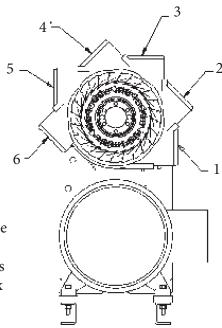


RB4000	unit	A	В	c	D	E	F	G	н
30 HP	in	281/16	95/8	16	4111/16	81/8	221/8	415/16	10½
30 HP	mm	712.788	244.475	406.4	1058.86	206.375	561.975	125.412	266.7
40 HP	in	31%	9%	16	4111/16	14%	23%	111/16	10½
40 HP	mm	803.275	250.825	406.4	1058.86	371.475	600.075	280.988	266.7
50 HP	in	31¾	9%	16	4111/16	14%	23%	111/16	10½
30 HP	mm	806.45	250.825	406.4	1058.86	371.475	600.075	280.988	266.7
60 HP	in	34¾6	12½	111/4	4111/16	14	271/16	2	101/2
OU FIF	mm	792.163	317.5	285.75	1058.86	355.6	687.387	50.8	266.7
75 HP	in	34¾6	12½	121/4	4111/16	14	271/16	2	101/2
/5 RP	mm	792.163	317.5	311.15	1058.86	355.6	687.387	50.8	266.7

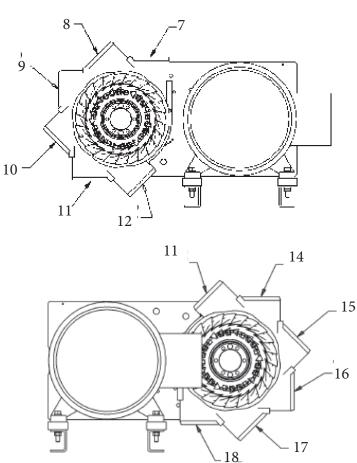
Weight	lbs.	kg
30 HP	395	179.169
40 HP	528	239.497
50 HP	587	266.259
60 HP	820	371.946
75 HP	890	403.697

Weight	lbs.	kg
RETRO KIT	280	1247.006

## **MOUNTING PLATE POSITION**



Position No. 5 is standard unless otherwise specified by customer. If possible, try to avoid Position No. 13-18 on 20HP blowers because of air filter and motor electric box interference.



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## **EQUIPMENT ARRIVAL AND INSPECTION**

Inspect the blower system at time of receipt to ensure that all components and accessories, as noted on the packing slip, were received and in good condition. Verify that the serial number on the packing slip matches the serial number shown on the blower head nameplate. Inspect the blower and motor assembly to ensure that the motor horsepower and voltage are correct.

If any equipment was damaged in transit, you will need to make a claim against the freight carrier immediately. If you have any shortages, discrepancies, or damage, please call your Republic Manufacturing Distributor or Republic Manufacturing at (800) 847-0380.

#### INSTALLATION

Lift the blower system by the lifting eye mounted on the top of the motor or by picking the blower up from underneath the motor. Do not lift the blower by the belt guard. Vibration isolators are included with every blower. Bolt your Republic Blower in place by the mounting brackets supplied with the blower. Use a minimum of four (4) mounting bolts. See the Specifications Section of the manual for equipment weights. No training required.

- 1. Have a qualified electrician configure the motor to your incoming voltage as noted in the Motor Wiring Section of the manual. Refer to the nameplate on the motor for the correct power supply requirements.
- 2. The blower should be located in a place where the drive belt and intake air filter can be easily serviced and maintained.
- 3. Avoid any type of liquid over spray or continuous wash down of the blower. Shield the blower if needed. Flooding the blower can cause damage to the system.
- 4. Double check the pulley alignment and install the belt as shown in the Motor Pulley and Installation Belt diagrams. Be sure to re-fasten the belt guard.
- 5. Install the inlet air filter Improper filtration will void warranty. Install system piping and check motor amperage draw. High amperage draw may indicate too much flow. Contact Republic Manufacturing or the local distributor with any questions.

#### **MOTOR WIRING AND START-UP**

- Only qualified personnel should perform wiring or maintenance on the blower assembly.
- Never run a centrifugal blower to atmosphere, as this can cause overloading and damage the motor. Always check your installation to make sure the motor is running within the motor manufacturers specified amp ranges.
- MOTOR ROTATION MUST BE CHECKED PRIOR TO INSTALLING THE BELT. Running the blower/ motor assembly backwards will cause improper performance and damage the blower.
- With the belt removed, "bump" the power to determine rotation of motor.
- The blower should be rotating clockwise (CW) from the belt side of the blower, counter-clockwise (CCW) if you are on the motor side or impeller side of the blower. Rotation arrows on the blower cast housing (Motor Side) show correct rotation of impeller rotation. If the motor is going the wrong direction, have your qualified electrician change the direction of rotation.
- If the blower is allowed to run in the wrong direction, you could cause damage to the idler pulley assembly spring or belt. Even in reverse, a centrifugal blower will still provide a substantial amount of airflow and pressure, but it will not perform to your specified needs.

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### **DRIVE BELT INFORMATION**

Republic utilizes a 20-groove belt on the RB4000 and has the part number stamped on the flat side of the belt. Republic recommends that you keep spare belts in stock. It is also recommended that replacement belts be purchased from Republic Manufacturing or a Republic distributor, to ensure that belt quality and blower performance are maintained. Belts do vary from manufacturer to manufacturer, and all Republic belts are inspected for belt thickness and imperfections prior to shipment.

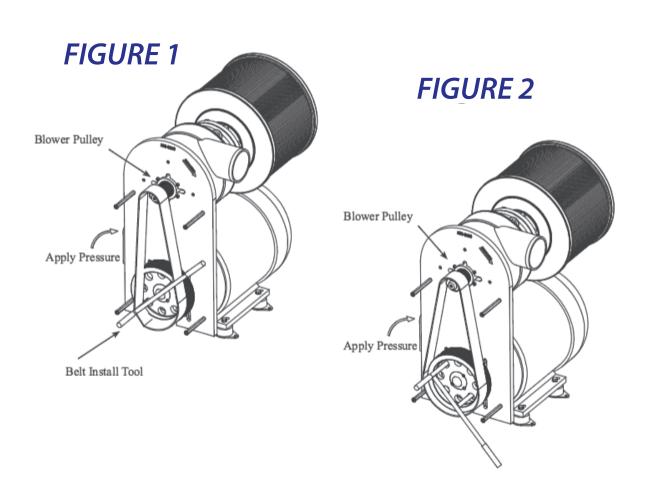
### **BELT SIZING INFORMATION**

Please find the part number stamped on the face of the small stainless steel blower pulley, and then refer to the following chart for the correct belt size.

RB4000 Replacement Parts Reference				
Blower Pulley Part No.	Belt Part No.			
231-3575	230-6620			
231-3595	230-6620			
231-0315	230-6620			
231-0335	230-6620			
231-0355	230-6620			
231-0375	230-6620			
231-0395	230-6620			

## **BELT REMOVAL AND INSTALLATION**

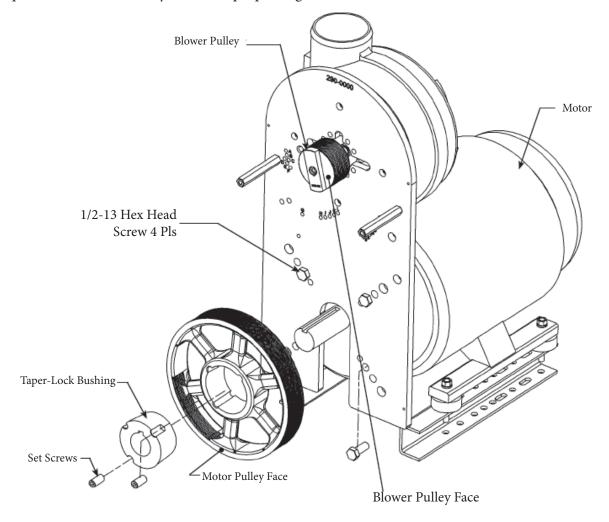
- 1. Position belt around the top of the blower pulley and hold firm.
- 2. Position belt around bottom half of motor pulley and hold firm.
- 3. Position Belt Installation Tool in motor pulley.
- 4. Rotate motor pulley while applying pressure to the belt by hand to "walk" the belt onto both pulleys until grooves are aligned.





## **MOTOR PULLEY INFORMATION**

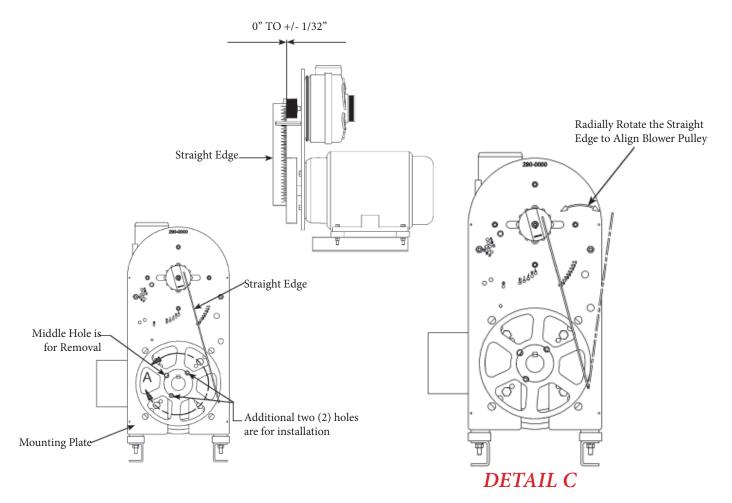
- When installing a new motor pulley or servicing your existing unit, make sure that the outer grooves on both the motor pulley and blower pulley are not damaged, nicked or dinged.
- Damaged pulley grooves can cause premature belt failures or higher than normal levels of vibration.
- Be sure to use a Torque wrench when installing the Motor Pulley.
- Torque the set screws to 36 ft./lbs. (5m/kg) or 430 in./lbs (5000mm).
- Torque the set screws evenly to ensure proper alignment.



#### **NOTES:**

Tension Pulley has been removed in the views for clarity purposes.

## **MOTOR PULLEY INSTALLATION**



## **Motor Pulley Installation Procedure**

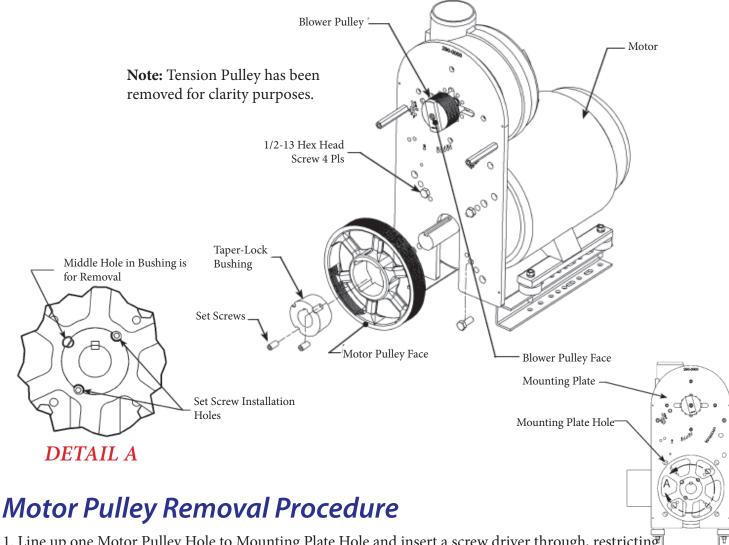
- 1. Install Bushing into Motor Pulley with set screws. Then install the Motor Pulley Assembly onto the motor's shaft.
- 2. Use a straight edge to align the Motor Pulley Face with the Blower Pulley Face. **Alignment must be within 0" to \pm 1/32" (0mm to \pm .792mm). The straight edge must be able to rotate radially and lay flush on two faces of the motor pulley while lying flush on the face of the blower pulley to insure proper alignment (see Detail C).**
- 3. Insert a screw driver through one of the Motor Pulley's and Mounting Plate's holes to keep the Motor Pulley from rotating while tightening the set screws.
- 4. Using a Torque wrench, set the torque to 36 ft./lbs.. and then torque the set screws equally.

#### **NOTES:**

May be performed by untrained personnel.

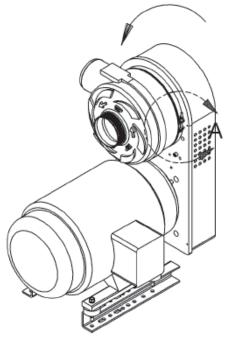


## **MOTOR PULLEY REMOVAL**



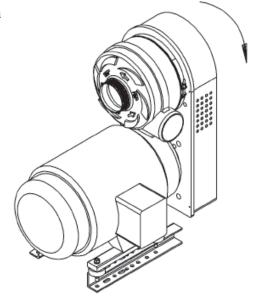
- 1. Line up one Motor Pulley Hole to Mounting Plate Hole and insert a screw driver through, restricting the Motor Pulley rotation.
- 2. Use a 1/4" (6.35mm) Allen wrench and remove the two (2) set screws from the Motor Pulley and Bushing.
- 3. Insert one of the removed set screws into the top Middle Hole of the Bushing.
- 4. While still keeping the Motor Pulley from rotating, tighten the Middle Hole set screw until the Motor Pulley separates from the Bushing.
- 5. When the Motor Pulley is loose, slide it off the motor shaft.
- 6. Be careful not the drop the Motor Pulley and damage the grooves.

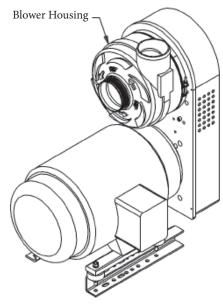
## **BLOWER HEAD ROTATION**

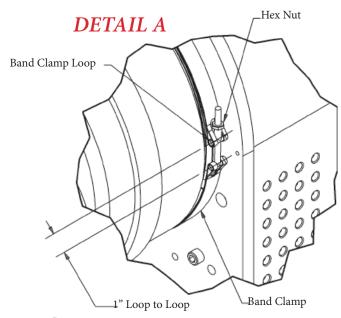


Blower Housing can rotate cw or ccw as shown in these views

**Note:** May be performed by untrained personnel.







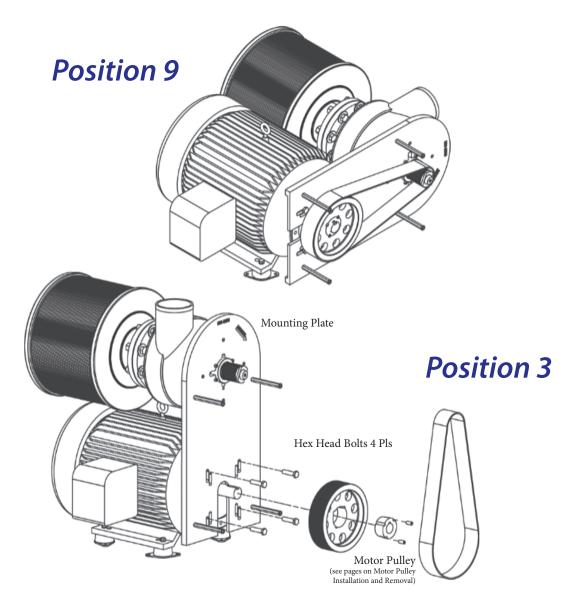
## **Blower Housing Rotational Procedures**

- 1. Loosen Hex Nut on Band Clamp using 3/8" (9.52mm) nut driver.
- 2. Rotate Blower Housing to desired position, then hand tighten Hex Nut until Band Clamp Loops are 1" (25.4mm) apart.

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## **MOUNTING PLATE POSITION**

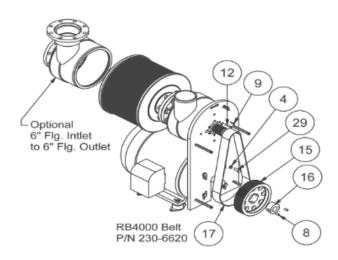


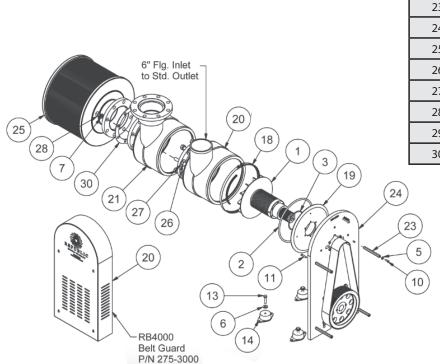
## **Mounting Plate Position Procedures**

- Option "A": Remove Motor Pulley then go to Step No. 2.
   Option "B": Leave Motor Pulley on shaft then go to Step No. 2.
- 2. Remove the four (4) Hex Head Bolts from the Mounting Plate behind the Motor Pulley.
- 3. Rotate Mounting Plate to desired position and re-install Hex Head bolts.

## **BLOWER HEAD ASSEMBLY**

200-4000



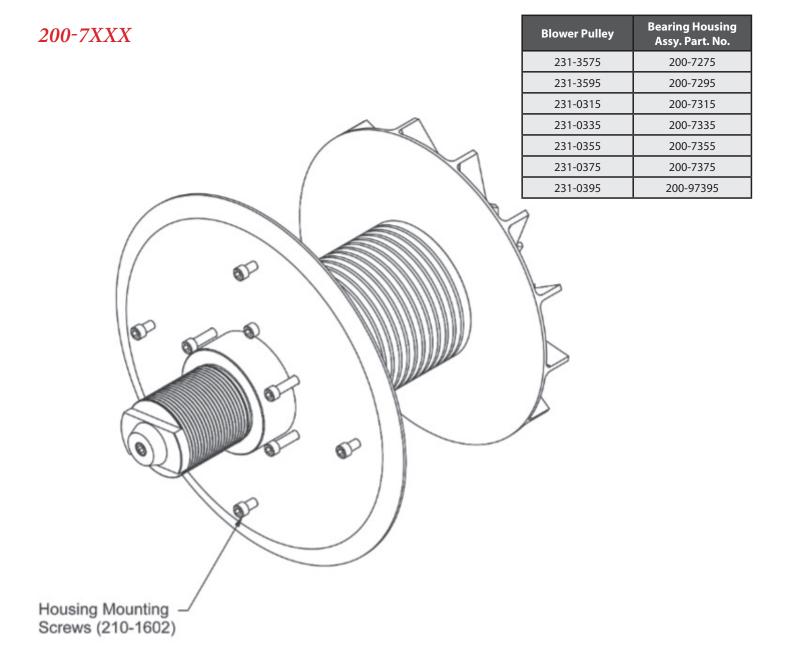


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Bill of Materials						
Item No.	Part No. Qty. Description					
1	200-7xxx	1	RB4000 Bearing Hub Assy			
2	210-0205	2	O-Ring 278 Viton			
3	210-0206	1	O-Ring 250 Viton			
4	210-0321	1	Washer, 5/8 ZP Split Lock			
5	210-0322	1	Washer, 5/16-18 SS Flat			
6	210-0326	7	Washer, 1/2-13 Flat SS			
7	210-0327	4	Washer, 3/4 ZP Split Lock			
8	210-1005	2	Set Screw 1/2-13 x 1" Soc Cup Pt			
9	210-1602	1	Screw, 5/16-18 x 1 SS SHC			
10	210-1607	2	Screw, SS 5/16-18 x 3/4 Button Hd			
11	210-1613	2	Screw, 5/16-18 x 3/4 SS SHC			
12	210-1614	1	Screw, 5/16-18 x 2-1/2 SS SHC			
13	210-1802	1	Screw, 1/2-13 x 2.0 SS Hex Hd			
14	210-2201	1	Isolator Mount, 661-30			
15	230-1035M	2	RB4000 K-Section Pulley (Machined)			
16	230-4003	1	Bushing 1 5/8 Bore 2517 TL			
17	230-4003	1	Belt RB4000			
18	230-6620	2	Clamp Band Assembly			
19	250-0903	1	Housing Plate			
20	250-3517	1	Blower-Flange Weldment			
21	250-3518	1	Blower-Flange Weldment			
22	250-3518FL	1	RB4000 Belt Guard			
23	275-3000	4	Stand-Off			
24	275-3501	1	Blower Mounting Plate			
25	290-3500	1	Poly Inlet Filter Assy.			
26	340-2070	8	Screw, 3/4-10 x 3.0 ZP Hex Hd			
27	750-0001	8	Washer, 3/4 Flat ZP			
28	750-0003	8	Nut, 3/4-10 ZP Hex			
29	750-0010	4	Screw, 5/8-11 x 1.50 ZP Hex Hd			
30	910-0184	2	6" Flg Gasket (Gas Vapors)			



## **RB4000 BALANCED BEARING HOUSING ASSEMBLY**



#### **NOTES:**

Bearing Housing Assembly sold as a balanced unit with specified pulley.

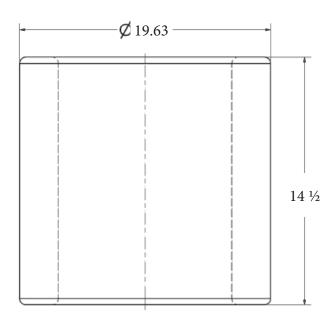
## **AIR FILTER INFORMATION**

Check air filters and filter gauges on a periodic basis and replace as needed. Filter gauges are located on the air filter canister (as an optional feature) or on the acoustical enclosure doors (standard feature). Dirty or clogged air filters can cause improper performance from the blower system.

Republic Manufacturing recommend that customers keep spare air filters in stock. Spare filters are also available from your local Republic Distributor. Call (800) 847-0380 to order filters.



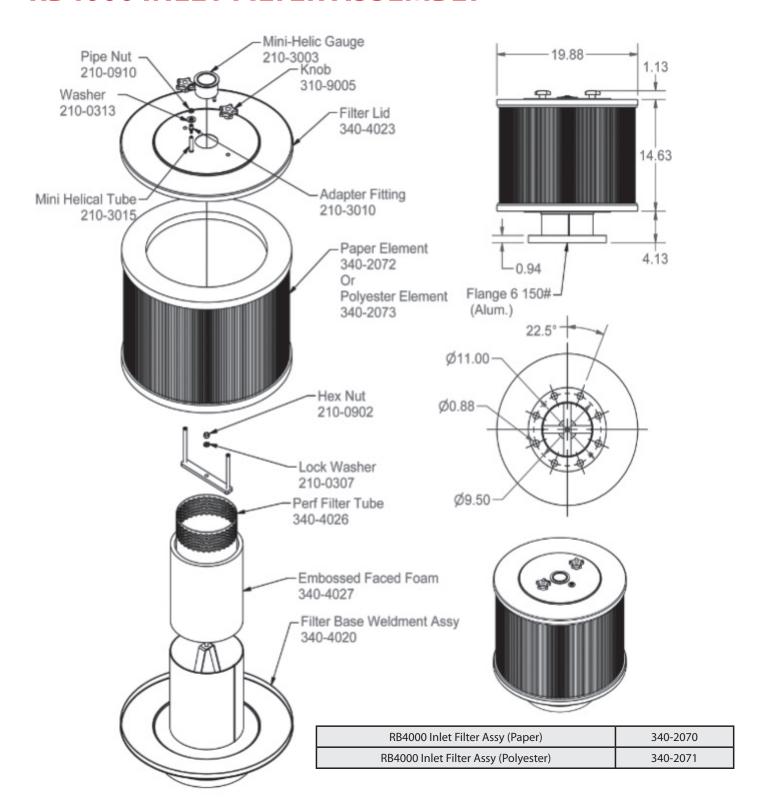
Replacement Filter Reference					
Paper Element	340-2072	Polyester Element	340-2073		



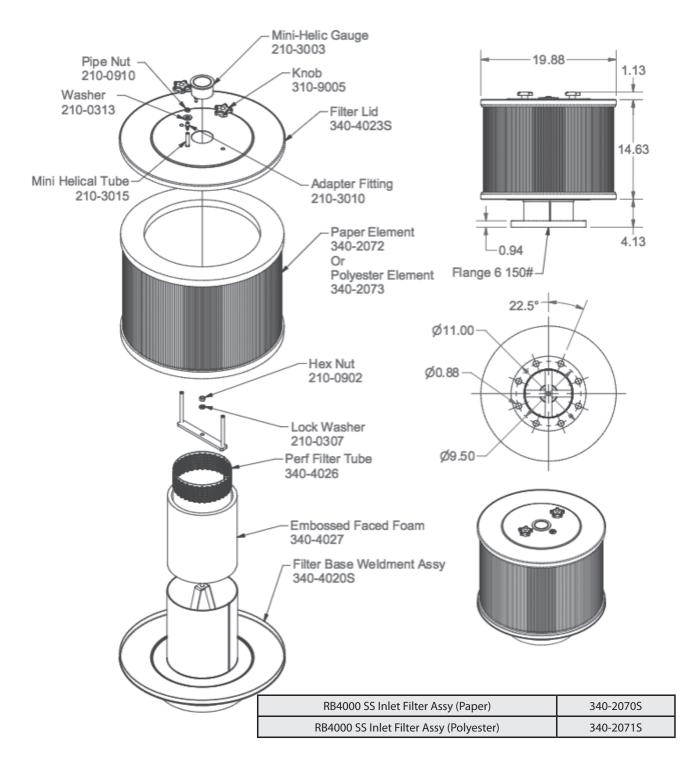
Replacement Filter Reference					
Paper Filter	4705 CFM	Min. Temp15°F/Max. Temp. 220°F	99.9% efficiency to 2 Micron		
Polyester Filter	4705 CFM	Min. Temp15°F/Max. Temp. 220°F	99+% efficiency to 2 Micron		



## **RB4000 INLET FILTER ASSEMBLY**

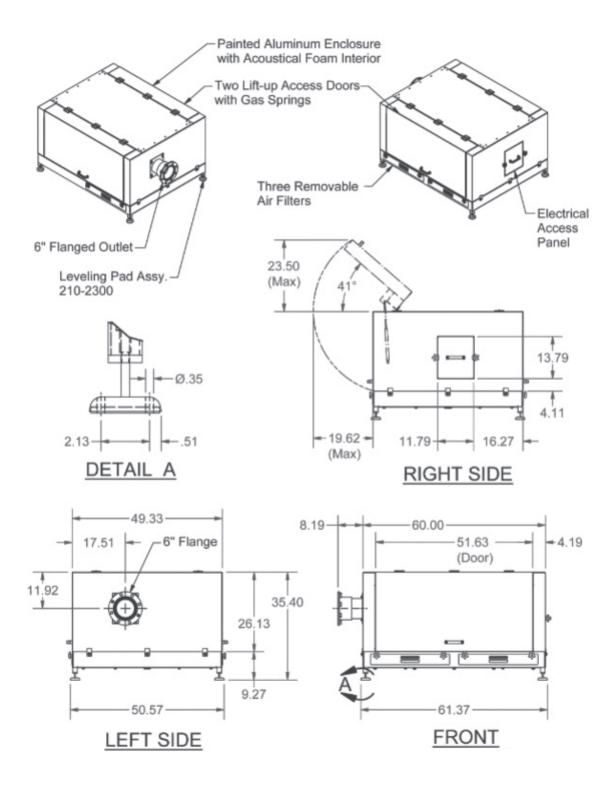


# RB4000 INLET FILTER ASSEMBLY (STAINLESS STEEL)

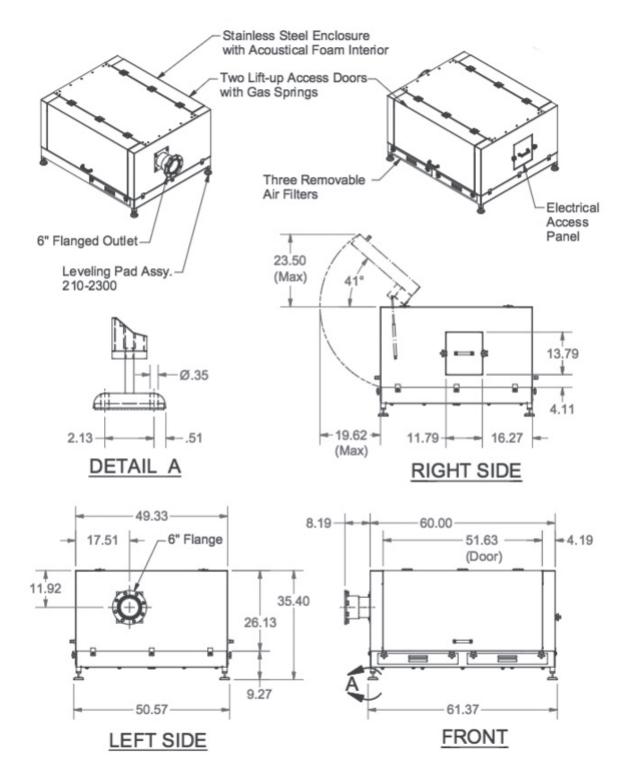




## **RB4000 LOW PROFILE ENCLOSURE**

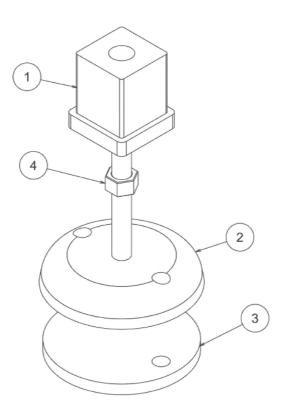


## **RB4000 ENCLOSURE (STAINLESS STEEL)**





# **LEVELING PAD ASSEMBLY**



Item No.	Part No.	Qty.	Description
1	21-2205	1	Tube End, Threaded 3/8-16
2	210-2206	2	Leveler, 3/8-16 (#VG-505-02-P38-L3)
3	210-2207	3	Pad, Leveler
4	210-0902	4	3/8-16 SS Hex Nut

### **BLOWER MAINTENANCE SCHEDULE**

#### Filter Maintenance

Replacement Filter Reference						
Paper Element	340-2070	Polyester Element	340-2071			

Filters should be changed as needed to maintain a differential pressure of less than 10" (inches) of water pressure differential. The dial on your filter change gauge should be in the green zone. Normal change intervals are between every two (2) weeks and 90 days depending on the contamination levels in your plant. See Filter Data Reference for additional information.

Filter Data Reference						
Paper Element	4705 CFM	Min. Temp15°F/Max. Temp. 220°F	99.9% efficiency to 2 Micron			
Polyester Element	4705 CFM	Min. Temp15°F/Max. Temp. 220°F	99.9% efficiency to 2 Micron			

#### **Enclosure Filter Maintenance**

REPLACEMENT PART NO. 292-0002 (METALLIC)

This filter is designed to remove large contaminants from entering the inside of your enclosure. It is an oil wetted wire mesh filter. Recommended cleaning interval is weekly or as needed in your facility. If this filter gets dirty, your blower could overheat and discharge pressure could be reduced.

CLEANING PROCEDURE FOR PART NO. 292-0002 Cleaning Procedure for Part No. 292-0002

- 1. Blow off contaminants with compressed air.
- 2. Clean with solvent in a parts washing tank.
- 3. Spray with a light coating of WD 40 or similar lightweight oil.

## **Pulley Alignment**

**Proper pulley alignment is very important.** Please see alignment instructions on pages 20.



# BEARING HOUSING REPLACEMENT PART NUMBERS

REPLACEMENT RB4000 BEARING HOUSING ASSEMBLY REFERENCE			
Blower Pulley Part No.	Bearing Housing Assy. Part No.		
230-0275	200-9275		
230-0295	200-9295		
230-0315	200-9315		
230-0335	200-9335		
230-0355	200-9355		
230-0375	200-9375		
230-0395	200-9395		

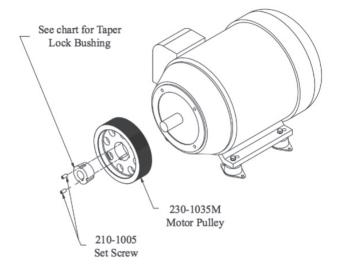
Bearings are a greased for life design. Bearings are assembled in a clean room environment. Do not attempt to grease bearings or your warranty will be void. If bearings fail in the blower housing, Republic recommends changing the Bearing Housing. Contact the local distributor or Republic Manufacturing (800) 847-0380 if assistance is needing in identifying the pulley size.

## **MOTOR PULLEY AND BUSHING MAINTENANCE**

Replacement Motor Pulley Reference			
RB4000	230-1035M		

Replacement Motor Pulley Bushing Reference			
Motor HP	Bushing Part No.	Bore	
30HP	230-4005	17⁄8″	
40HP	230-4005	11%"	
50HP	230-4005	11%"	
60HP	230-4005	11%"	
75HP	230-4005	11%"	

When installing a new motor pulley or servicing your existing unit, verify the outer grooves on both the motor pulley and blower pulley are not damaged, nicked or dinged. Damaged pulley grooves can cause premature belt failures or higher than normal levels of vibration. Be sure to use a torque wrench when installing the motor pulley. Torque the setscrews to 36 ft./lbs. (5m/kg) or 430 in./lbs. (5000mm). Torque the setscrews evenly to ensure proper alignment.



## **TROUBLE SHOOTING GUIDELINES**

Problem	Cause	Suggested Action
Low Flow, Pressure	Blower is rotating backwards	
or Vacuum	-	
	(Check the motor wiring)	
	Dirty or contaminated filter	
	Collapsed flex hose or piping	Replace hose or piping
	Worn or damage Impeller	Replace Bearing Housing
	Worn belt (slipping)	
	Belt Tensioning Spring worn out	
	Butterfly valve is closed	Open butterfly and check amperage
	Piping design too small for the application	Call Republic Blower Systems or Local Distributor
	Improper blower application	Call Republic Blower Systems or Local Distributor
	Air leakage	Check all connections
Electrical Over- loading	Exceeding the designed CFM of the blower motor	
	Blower RPM too high	
	Damaged motor bearing or winding	
	Electrical supply problems	
	Blower not connected to air knives or pipe	
Irregular Noise	Blockage in the air lines or piping	
	Leakage in the pipes, cracked or loose flex hose	
	Frayed or a bad belt	Replace belt and spring
	Bolts loose on the motor mounts	
	Blower bearings are worn	
	Motor bearings worn or motor fan is rubbing	
	Blower is receiving vibration from other equipment in the vicinity	
Belt Slipping	Worn belt	Replace belt & spring
	Belt is contaminated due to the environment	Clean or replace belt
	Pulley grooves worn, check both pulleys	Replace Pulley
	Dirt, dust or debris pulled inside the belt guard area	Clean area
	Incorrect belt size	
	Low belt tension	Replace belt



## **TROUBLE SHOOTING GUIDELINES**

Problem	Cause	Suggested Action
Belt Slipping	Residue build-up on pulley(s)	Clean pulley(s) with a brass brush
	Bearings seized	Replace Bearing Housing
	Foreign material preventing Bearing Housing from rotating freely	Replace Bearing Housing
Belt Fraying	Foreign material rubbing on belt	Remove foreign material, change belt & spring
	Belt is not seated correctly on pulleys and overlapping edges	Align belt correctly, change belt & spring
	Worn belt	Replace belt & spring
Belt is Jumping or Disintegrating	Motor Pulley out of alignment	See alignment guidelines
	Worn belt	Replace belt & spring
	Pulley grooves worn, check both pulleys	Replace pulley(s)
	Belt is contaminated	Clean or replace belt
	Residue build-up on pulley(s)	Clean pulley(s) with a brass brush
	Bearings seized	Replace Bearing Housing
	Foreign material preventing Bearing Housing from rotating freely	Replace Bearing Housing
	Frequent motor starting and stopping	Attach soft start

#### WARRANTY TERMS AND CONDITIONS

Republic Manufacturing<sup>®</sup> Company warrants all finished Republic Blower Systems<sup>®</sup> products to be free from functional defects in material and workmanship for a period of twelve (12) months from the date of installation, or no longer than eighteen (18) months from shipment.

Wear parts such as drive belts, filter elements, hoses and pulleys are not covered by the 12 to 18 month warranty.

#### DISASSEMBLY OF BLOWER MAY VOID WARRANTY.

To obtain service within the warranty period, first contact your authorized Republic Manufacturing® dealer or Republic Manufacturing® Service Department. Republic's responsibility under this warranty shall be to provide an analysis of the blower, which will determine course of action. Any product found to be defective within the warranty period will merit either:

- a. A no charge repair of existing blower. Any freight charges will be the purchaser's responsibility. b. A replacement blower\*. Any freight charges will be the purchaser's responsibility.
- \*This option would be chargeable replacement until the original blower is received by Republic Manufacturing® and warranty is approved.

Republic Manufacturing® shall not be liable for incidental nor consequential damages resulting from the use of this product. There are no expressed nor implied warranties, which extend beyond the warranty of merchantability or fitness for a particular purpose to the equipment and/or its parts and components.



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